

Attorney Docket No. U 0186 OS/MINPT

Serial No. 10/631,299

Art Unit: 1742

Applicants' Amendment After the Final Action of January 20, 2006

REMARKS/ARGUMENTS

Amendment to the Claims

By the above Listing of Claims, independent claims 1, 10 and 12 are amended and new claims 26-33 are added. Claims 2-8 and 13-25 are cancelled. The amendment and new claims add no new matter. Upon entry of the amendments, claims 1, 9-12 and 26-33 will be pending.

Independent apparatus claim 1 is amended to clarify that it is directed to an extraction/stripping circuit design as shown in applicants' Figure 2 in which the three extraction stages are linked in series and the aqueous and organic phases are passed from extraction stage to extraction stage in countercurrent flow. The amendments to the claim are supported by applicants' Figure 2 and its description in the specification at page 5, line 20 through page 6, line 7.

Independent method improvement claim 10 is also amended to clarify that it is directed to an extraction/stripping process as shown in applicants' Figure 2 in which the three extraction stages are linked in series and the aqueous and organic phases are passed from extraction stage to extraction stage in countercurrent flow. Cancelled dependent claim 3 is now incorporated into amended claim 10. In amended claim 10 the connection of the three extraction stages is described as being "in series" as would be understood by the art-skilled person from Figure 2. The amendments to the claim are supported by applicants' Figure 2 and its description in the specification at page 5, line 20 through page 6, line 7.

Independent method improvement claim 12 is also amended to clarify that it is directed to an extraction/stripping process as shown in applicants' Figure 2 in which the three extraction stages are linked in series and the aqueous and organic phases are passed from extraction stage to extraction stage in countercurrent flow. In amended claim 12, the respective flow of the aqueous and organic phase is described in terms of the particular extraction stages one, two and three and the single stripping stage. The amendments to the claim are supported by applicants' Figure 2 and its description in the specification at page 5, line 20 through page 6, line 7.

Attorney Docket No. U 0186 OS/MINPT

Serial No. 10/631,299

Art Unit: 1742

Applicants' Amendment After the Final Action of January 20, 2006

New process claim 26 corresponds to cancelled process claim 14. As the examiner will see from this new version of claim 14, this step by step version of applicants' process was revised to add steps and to more clearly identify the content of the particular aqueous and organic phase involved in and produced by each step. Therefore, the undersigned attorney for applicants elected to present the revised claim in a new and uncluttered form. The first added step is step I) which sets out the extraction/strip circuit configuration (apparatuses). The second added step is step IV) which describes the flow into and out of the strip stage in more detail. New process claim 14 is supported by a combination of the general metal recovery process steps 2-7 in the specification on page 3, line 14, through page 5, line 2, and the description of both Figures 1 and 2 on page 5, line 6 through page 6, line 7.

New dependent process claims 27-33 correspond to cancelled claims 15, 16 and 21-25.

Applicants believe that the claims presented in the foregoing Listing of Claims put the application in condition for allowance and that their entry is therefore proper under 35 USC §116. Such entry and allowance, for the reasons presented in applicants' amendment paper dated December 6, 2005, and below is therefore respectfully solicited.

Alternatively, entry of the amendments presented in the Listing of Claims is believed to be proper because they put the claims in better form for appeal. Applicants submit that the amendments to the claims, being of a restrictive nature, do not present new issues which otherwise might prohibit their entry.

Attorney Docket No. U 0186 OS/MINPT

Serial No. 10/631,299

Art Unit: 1742

Applicants' Amendment After the Final Action of January 20, 2006

Rejections Under 35 USC §103(a) for Obviousness

Claims 1, 9, 10-12, and 26-33, are pending in the subject application pursuant to the foregoing Amendment After Final.

MPEP 2142 Legal Concept of - 2100 Patentability, under the second heading states the three elements needed to establish a *prima facie* case of obviousness:

"ESTABLISHING A PRIMA FACIE CASE OF OBVIOUSNESS"

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria.

The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). See MPEP § 2144 - § 2144.09 for examples of reasoning supporting obviousness rejections"
(Underlining added.)

The Examiner has Failed to Establish the Criteria for Prima Facie Obviousness

(A) Claims 1-3, 10-12, 14-16 and 19-24 Stand Finally Rejected As Obvious Under 35 USC §103(a) Over Domic et al. (US Patent No. 4,028,462).

Applicants' claims require the specific combination of three extraction stages (in series with countercurrent flow) and only one stripping stage. As stated in MPEP 2142 above, the teaching of the prior art must be directed to all of the limitations of the claims. Applicants submit that Domic et al. specifically teaches away from only one stripping stage when three extraction stages

Attorney Docket No. U 0186 OS/MINPT

Serial No. 10/631,299

Art Unit: 1742

Applicants' Amendment After the Final Action of January 20, 2006

are present. In Domic et al., two stripping stages are required with the three extraction stages in order to obtain the objective of Domic et al. to alternate the loading and unloading, i.e., extraction and stripping, functions. Thus, at col. 3, lines 56-64, Domic et al. states:

"The way to improve this driving force is to discharge partially the organic phase, before EACH EXTRACTION STEP, so the avidity of the organic phase is always maintained in a high level in such a way that its effective charge is greatly improved per cycle.

The present invention relates to a procedure intended to load or unload (partially or fully) the organic phase in an ALTERNATE manner."

(Capitalization in the original.)

The operation of this concept is clearly shown in the Example Table of Domic et al., which shows two stripping stages for CASES a, b and c and three stripping stages for CASE d, all of which have three extraction stages. Thus, Domic et al. discloses this alternating extraction stage and stripping stage concept both generically and specifically.

Contrary to the examiner's statement, the claims of Domic et al. also do not allow for only one stripping stage were there are three extraction stages. Claims 1-3 of Domic et al. clearly show the requirement for alternating extraction and stripping stages:

1. In a liquid-liquid extraction process for the extraction of a constituent from an aqueous solution through the use of an organic solvent, in which process said constituent is extracted from the aqueous feed solution into said organic solvent and backwashed into an aqueous elution solution, wherein successive extraction and successive elution contacts occur, the improvement comprising
partially discharging said constituent from said organic solvent through contact of said organic solvent with said aqueous elution solution after each extraction contact.
2. In a liquid-liquid extraction process for the extraction of a constituent from an aqueous solution through the use of an organic solvent in which process said constituent is extracted from the aqueous feed solution into said organic solvent and backwashed into an aqueous elution solution, wherein successive extraction and successive elution contacts occur, the improvement comprising

Attorney Docket No. U 0186 OS/MINPT

Serial No. 10/631,299

Art Unit: 1742

Applicants' Amendment After the Final Action of January 20, 2006

passing said organic solvent through an extraction stage after each elution stage, to charge said organic solvent with said constituent during each said extraction stage.

3. In a liquid-liquid extraction process for the extraction of a constituent from an aqueous solution through the use of an organic solvent in which process said constituent is extracted from the aqueous feed solution into said organic solvent and backwashed into an aqueous elution solution, wherein several extraction and several elution contacts occur, the improvement comprising *flowing said organic solvent alternatively through an extraction contact and then through an elution contact, so that the loading and unloading of the organic solvent with said constituent proceeds alternatively from stage to stage.*

(Italics added)

Claims 4, 6 and 8 of Domic et al. express the same concept in more mathematical terms.

Applicants submit that the examiner's reading of these claims to allow a single stripping stage with three extraction stages is simply incorrect. Contrary to the examiner's statement in the final action, Domic et al. does indeed **require** two stripping stages with three extraction stages.

Even Figure 1 of Domic et al., which does not show counter current flow as in applicants' previous and amended claims, shows two stripping stages with three extraction stages. Domic et al. does not teach or suggest anything less than two stripping stages with three extraction stages - either conceptually or mathematically or by example.

The examiner has failed to establish a *prima facie* case of obviousness because he has not shown how Domic et al. teaches or suggests all of the limitations of applicants' claims.

Moreover, as stated in the heading of MPEP 2144.04 II B: "Omission of an Element with Retention of the Element's Function Is an Indicia of Unobviousness." The second stripping stage is clearly needed in the Domic et al. configurations having three extraction stages.

Applicants' are the first to show that improved metal recovery can be obtained with the omission

Attorney Docket No. U 0186 OS/MINPT
Serial No. 10/631,299
Art Unit: 1742
Applicants' Amendment After the Final Action of January 20, 2006

of this second stripping stage in an extraction circuit configuration having three extraction stages connected in series with countercurrent flow.

For these reasons, Applicants respectfully submit that the examiner has not established a *prima facie* case of obviousness of the combination of three extraction stages with one stripping stage in their rejected claims 1-3, 10-12, 14-16 and 19-24, or in the amended and new claims submitted herein, over Domic et al. and respectfully request withdrawal of this rejection under 35 USC §103(a).

(B) Claims 1-3, 9-12, 14-16 and 19-25 Stand Finally Rejected For Obviousness Over Lower (US Patent No. 3,429,694) and Pang (US Patent No. 3,697,400).

The examiner states that both Lower, in the embodiment of Figure 1, and Pang, also in the embodiment of Figure 1, "teach a method and apparatus for counter current solvent extraction of copper values comprising at least 3 counter current extraction stages, a wash, or filter stage and a strip stage, thereby showing all aspects of the above claims, except the use of only a single strip stage and three extraction stages." (emphasis added)

As stated above, without the teaching or suggestion of the combination one stripping stage with three extraction stages, as required by the limitations of applicants' claims, neither Pang nor Lower nor their combination can establish a *prima facie* case of obviousness.

In the final action the examiner states: "Again, neither Lower or Pang require any specific number of stripping or extraction stages, and cannot be limited as to what they teach by their preferred embodiments, and in the claims of each of Lower and Pang, for example, only a single stripping stage is required." Applicants submit that the claims do not teach or suggest anything about the number of either extraction or stripping stages. Thus, one must rely upon the teachings of the specification and drawings as to what they *suggest* about the number of extraction and stripping stages *and the combinations thereof*. Applicants claims are directed to a particular

Attorney Docket No. U 0186 OS/MINPT

Serial No. 10/631,299

Art Unit: 1742

Applicants' Amendment After the Final Action of January 20, 2006

combination of extraction and stripping stages, and *it is this combination* which must be suggested by the combined teachings of the prior art references.

The claims of both Lower and Pang refer only to "extracting" and "stripping" and are silent with respect to extraction and stripping stages. Thus, one must make any inferences about the number and combination of extraction and stripping stages from the specification and drawings of each reference.

The only mention in the specification of Lower of the number of extraction and stripping stages is in the two examples. In both examples *four* extraction stages and *four* stripping stages are used - as in the Drawing of Lower. Thus, there is *no basis in Lower* for a suggestion that either three extraction stages or one stripping stage be used - let alone a basis for a suggestion of this combination of extraction and stripping stages. (One reason for this is that the invention and disclosure of Lower are directed primarily to the extractants and not to the extraction/stripping processes themselves.)

The only mention in the specification of Pang of the number of extraction and stripping stages is in examples 9 and 10. In example 9, *five* extraction stages and *two* stripping stages are used. Example 10 refers to the drawing which shows *four* extraction stages in combination with *four* stripping stages - as in Lower. Thus, there is *no basis in Pang* for a suggestion that either three extraction stages or one stripping stage be used - let alone for a suggestion of this combination of extraction and stripping stages. (In Pang the invention and disclosure are also directed primarily to the extractants and not the extraction/stripping processes themselves.)

The art as whole, i.e. Lower and Pang in this obviousness rejection, at best teaches a combination of four or five extraction stages with two or four stripping stages. The statement at the end of example 9 in Pang reinforces this specific teaching of more extraction and stripping stages than in applicants' claimed combination.

Attorney Docket No. U 0186 OS/MINPT

Serial No. 10/631,299

Art Unit: 1742

Applicants' Amendment After the Final Action of January 20, 2006

For these reasons, Applicants respectfully submit that the examiner has not established a *prima facie* case of obviousness of the combination of three extraction stages with one stripping stage in their rejected claims 1-3, 9-12, 14-16 and 19-25, or in the amended and new claims submitted herein, over Lower and Pang. and respectfully request withdrawal of this rejection under 35 USC §103(a).

Accordingly, applicants respectfully request withdrawal of the rejection for obviousness over Lower and Pang under 35 USC 103(a) with respect to pending claims 1-3, 9-12, 14-16 and 19-25.

Applicants submit further that the art as a whole in this case includes Domic et al., Lower and Pang even though they are not combined in a single rejection. Domic et al. is the most relevant to applicants claimed combination of three extraction and one stripping stage because its invention and disclosure are directed to the number and configuration of extraction and stripping stages. However, as noted above, its teaching *precludes* applicants' claimed combination. Applicants submit that Lower and Pang further teach away from their claimed combination by teaching the desirability of both more extraction and more stripping stages than in applicants' claimed combination. Thus, withdrawal of the rejections for obviousness is further solicited because the art as a whole from both rejections fails to establish a *prima facie* case of obviousness.

Applicants believe that entry of the foregoing amendments is proper under 35 USC §116 because they place the application in condition for allowance due to the lack of a *prima facie* case of obviousness. Should the examiner disagree and not allow any of the claims, applicants respectfully request a detailed response to applicants' arguments. Should the examiner deny the entry of any or all of the claims amendments, applicants request a detailed explanation of the reason for the denial (for example, specifically what new issues the particular claim presents). Applicants need to have a reasonable explanation of the basis for the examiner's actions so that

Attorney Docket No. U 0186 OS/MINPT

Serial No. 10/631,299

Art Unit: 1742

Applicants' Amendment After the Final Action of January 20, 2006

they know what issues remain in order to address in presenting amended claims in a Request for Continuing Examination (RCE), in a Continuing Application or on Appeal.

Alternatively, Applicants believe that the foregoing claim amendments should be entered because they place the application in better condition for appeal since the claim amendments are restrictive in nature.


The Examiner is requested to telephone the undersigned attorney if any further questions remain which can be resolved by a telephone interview.

Respectfully submitted,

GARY A. KORDOSKY, et al

March 20, 2006

(Date)



ARTHUR G. SEIFERT

Registration No. 28,040

COGNIS CORPORATION

300 Brookside Avenue

Ambler, PA 19002

Telephone: (215) 628-1129

AGS:ras